

Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed January 22, 2003. In the Office Action, claims 2-5, 8, and 10-11 were rejected under 35 U.S.C. §112, second paragraph, claim 1 was rejected under 35 U.S.C. §102(b), and claims 2-8, and 10-11 were rejected under 35 U.S.C. §103(a).

I. RESPONSE TO REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH

In paragraph 3 of the Office Action mailed January 22, 2003, the Examiner rejected claims 2-5, 8, and 10-11 under 35 U.S.C. §112, second paragraph.

A. Dependent Claim 2

The Examiner rejected claim 2 maintaining that the recitation that the workpieces are stored "in a substantially vertical orientation" is unclear because the workpiece does not have a particular shape or structure. Applicants have amended the preamble of claim 1 to clarify that each workpiece is "substantially flat." Thus, Applicants respectfully request that the Examiner remove this rejection to claim 2.

B. Dependent Claims 3-5

The Examiner rejected claims 3-5 maintaining that the recitation that the number of stockers may be "varied between one and ..." is indefinite because claim 1 requires "at least two stockers." Dependent claims 3-5 depend directly from independent claim 1. Applicants have amended claim 1 to clarify that the workpiece management system recited in claim 1 includes "a stocker." Thus, Applicants respectfully request that the Examiner remove this rejection to claims 3-5.

C. Independent Claim 8

The Examiner rejected claim 8 maintaining that the recitation of "the reticles" in line 4 lacks an antecedent basis. Applicants have amended claim 8 to include the term "the reticles" in the preamble. Therefore, the term "the reticles" recited in claim 8, line 4

has an antecedent basis. Applicants respectfully request that the Examiner remove this rejection to claim 8.

D. Dependent Claims 10 and 11

Dependent claims 10 and 11 depend directly or indirectly from independent claim 8. These dependent claims include all of the limitations of the independent claim from which it depends. Applicants respectfully assert that dependent claims 10 and 11 be allowed for at least the reasons set forth above from independent claim 8.

II. RESPONSE TO REJECTIONS UNDER 35 U.S.C. §102(b)

In paragraph 4 of the Office Action mailed January 22, 2003, the Examiner rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,829,939 issued to Iwai et al. ("*Iwai*").

The apparatus disclosed in *Iwai* stores cassettes 211 that have been removed from a pod 209 within an isolated environment. A pass box 210 located at the front end of the apparatus separates the pod shell from the pod door. A cassette transfer 322, located just behind the pass box 210, removes the cassette 211 from the pass box 210 and is raised by an elevator 323 up to a cassette stock stage 320. The cassette stock stage 320 "holds a plurality of cassettes 211." *Iwai*, col. 32, lines 38-40. The cassette stock stage 320 stores a cassette 211 until the wafers stored in the cassette 211 are ready for processing. The elevator 323 then lowers the cassette transfer 322 from the cassette stock stage 320 to a transfer stage 324. A transfer unit 263 extracts the wafers 205 from the cassette 211 and places the wafers 205 into a wafer boat 261 for processing. The apparatus in *Iwai* always stores the wafers within the cassette 211.

A. Independent Claim 1 Patentably Distinguishes over *Iwai*

Amended claim 1, in part, recites:

a stocker for storing the workpieces after they have been removed from the workpiece storage cassette

The apparatus disclosed in *Iwai* includes a storage area for storing cassettes 211 - the cassette stock stage 320. In contrast to the stocker recited in claim 1, the cassette

stock stage 320 stores cassettes 211 - not individual wafers 205. *Iwai* teaches removing the cassette 211 from the pass box 210 after the pod door has been separated from the pod shell. The cassette 211 is then transferred up to the cassette stock stage 320 where the cassette 211 remains until the wafers in the cassette 211 are ready for processing. *Iwai* does not teach removing a wafer 205 from the cassette 211 and storing the individual wafer 205 in the cassette stock stage 320. Accordingly, *Iwai* does not disclose every element recited in amended claim 1. Therefore, Applicants respectfully suggest that the system recited in amended claim 1 is not anticipated by *Iwai*.

III. RESPONSE TO REJECTIONS UNDER 35 U.S.C. §103(a)

In paragraphs 5-7 of the Office Action mailed January 22, 2003, the Examiner rejected claims 2-8, and 10-11 under 35 U.S.C. §103(a) as being unpatentable over several combinations of the following references:

- (1) U.S. Patent No. 5,829,939 issued to Iwai et al. ("*Iwai*");
- (2) U.S. Patent No. 4,999,671 issued to Iizuka ("*Iizuka*"); and
- (3) U.S. Patent No. 4,867,629 issued to Iwasawa et al. ("*Iwasawa*").

A summary of *Iwai* has been provided above.

The device disclosed in *Iizuka* stores reticles 6 within a cassette library 2. The cassette library 2 stores each reticle 6 within a reticle cassette 4. The reticle cassettes 4 are vertically stacked in the cassette library 2 while waiting to be transferred to the air-conditioned chamber 1. *Iizuka*, Figs. 1-4. The device disclosed in *Iizuka* cannot store a reticle 6 unless it is stored within a cassette 4.

Iwasawa discloses a dust-tight storage cabinet that stores wafer cassettes 44. The wafer cassettes 44 pass into and out of the cabinet through an entrance 48. *Iwasawa*, Figs. 2-3. When a cassette 44 enters the storage cabinet, the cassette 44 is initially stored on a receiving plate 94. A transfer mechanism 96 transfers the cassette 44 from the receiving plate 94 to a vacant cassette compartment 92. The cassette

compartments 92 open radially outward from a rotation shaft 70 so that the transfer mechanism 96 may access any of the cassette compartments 92.

A. *Iwai* in view of *lizuka*

In paragraph 5 of the Office Action, the Examiner rejected claims 3-7 under 35 U.S.C. §103(a) as being unpatentable over *Iwai* in view of *lizuka*.

Dependent claims 3-7 depend directly or indirectly from independent claim 1. These dependent claims include all of the limitations of the independent claim from which it depends. Amended claim 1, in part, recites:

a stocker for storing the workpieces after they have been removed from the workpiece storage cassette;

As previously discussed above with regard to claim 1, the cassette stock stage 320 disclosed in *Iwai* cannot store individual wafers – the cassette stock stage 320 only stores cassettes 211. The “stocker” recited in claim 1 of the present invention achieves a higher storage density than the cassettes stock stage 320 disclosed in *Iwai* because the workpieces are removed from the cassette before the workpieces are stored. Thus the stocker recited in claim 1 does not have to store the cassette.

Further, *Iwai* does not suggest modifying the cassette stock stage 320 to store an individual wafer 205 after it has been removed from the cassette 211. The cassette stock stage 320 consists of multiple flat shelves, each designed to support a cassette 211. The shelves cannot support a wafer 205 that has been removed the cassette 211. Therefore, the system recited in amended claim 1 is not obvious over *Iwai*.

Moreover, the device disclosed in *lizuka* does not provide the elements lacking in *Iwai*. *lizuka* requires that a reticle 6 stored in the library 2 must be contained within a cassette 4 at all times. *lizuka* provides no motivation to modify the library 2 to store individual reticles 6 without being contained in a cassette 4. The “stocker” recited in claim 1 of the present invention achieves a higher storage density than the cassette library 2 in *lizuka*. The cassette library 2 can only store as many cassettes 4 that will fit into the library 2. As the cassettes 4 are much wider than an individual reticle 6, the storage capacity of the cassette library 2 will be less than the “stocker” recited in claim 1

of the present invention. Therefore, the system recited in amended claim 1 is not obvious over *Iwai* in view of *Iizuka*.

B. *Iwai* in view of *Iwasawa*

In paragraph 6 of the Office Action mailed January 22, 2003, the Examiner rejected claims 2 and 8 under 35 U.S.C. §103(a) as being unpatentable over *Iwai* in view of *Iwasawa*.

1. Dependent Claim 2 Patentably Distinguishes over *Iwai* in view of *Iwasawa*

Dependent claim 2 depends directly or indirectly from independent claim 1. Dependent claim 2 includes all of the limitations of the independent claim from which it depends. Amended claim 1, in part, recites:

a stocker for storing the workpieces after they have been removed from the workpiece storage cassette;

As previously discussed above with regard to claim 1, the cassette stock stage 320 in *Iwai* stores cassettes - not individual wafers. *Iwai* does not suggest modifying the cassette stock stage 320 to store individual wafers 205 after they have been removed from a cassette 211. The cassette stock stage 320 includes multiple flat shelves, each designed to hold a cassette 211. Storing individual wafers after they have been removed from a cassette allows the "stocker" recited in claim 1 of the present invention to achieve a higher storage density than *Iwai*. Therefore, the system recited in amended claim 1 is not obvious over *Iwai*.

Moreover, the cabinet disclosed in *Iwasawa* does not provide the elements lacking in *Iwai*. In contrast to the present invention, *Iwasawa* stores cassettes and not individual wafers after they have been removed from the cassette. In *Iwasawa*, cassettes 44 enter the cabinet through the entrance 48 and are placed on the receiving plate 94. The transfer mechanism 96 removes the cassette 44 from the receiving plate 94 and places the cassette 44 into a compartment 92. The transfer mechanism 96 cannot remove a wafer out of the cassette 44 and place the wafer into the compartment 92. Further, the compartment 92 cannot store individual wafers. Each compartment 92 is a flat shelf designed to store a cassette. *Iwasawa* does not suggest that the

compartments 92 can be modified to store individual wafers. Therefore, Applicants respectfully suggest that the system recited in claim 2 is not obvious over *Iwai* in view of *Iwasawa*.

2. Independent Claim 8 Patently Distinguishes over *Iwai* in view of *Iwasawa*

Amended claim 8, in part, recites:

a reticle stocker capable of storing a plurality of individual reticles that have been removed from the cassette

As previously discussed above with regard to claim 1, the cassette stock stage 320 disclosed in *Iwai* cannot store individual wafers 205. Therefore, for at least the reasons set forth above with regard to claim 1, the system recited in claim 8 is not obvious over *Iwai*.

Moreover, each chamber 92 in *Iwasawa* stores a cassette 44 and not an individual wafer. Therefore, for at least the reasons set forth with regard to claim 1, the system recited in claim 8 is not obvious over *Iwai* in view of *Iwasawa*.

C. *Iwai* in view of *Iwasawa*, and further in view of *Iizuka*

In paragraph 7 of the Office Action mailed January 22, 2003, the Examiner rejected claims 10 and 11 under 35 U.S.C. §103(a) as being unpatentable over *Iwai* in view of *Iwasawa*, and further in view of *Iizuka*.

Dependent claims 10-11 depends directly or indirectly from independent claim 8. These dependent claims include all of the limitations of the independent claim from which they depend. Amended claim 8, in part, recites:

a reticle stocker capable of storing a plurality of individual reticles that have been removed from the cassette

As previously discussed above with regard to claim 8, the cassette stock stage 320 disclosed in *Iwai* stores a cassette 211 and not individual an individual wafer 205. Additionally, *Iwai* does not suggest to modify the cassette stock stage 320 to accommodate an individual wafer 205 that has been removed from the cassette 211.

Further, as previously discussed above with regard to claim 8, each chamber 92 in *Iwasawa* stores a cassette and not an individual wafer. *Iwasawa* does not provide any motivation to modify the chamber 92 in order to store an individual wafer instead of a cassette 44. Therefore, for at least the reasons set forth above with regard to claim 8, the system recited in claim 8 is not obvious over *Iwai* in view of *Iwasawa*.

Moreover, *lizuka* does not suggest modifying the library 2 in order to store a reticle 6 without a cassette 4. Eliminating the cassettes 4 in *lizuka* would also require modifying the transport system that transfers the cassettes 4 between the library 2 and the air-conditioned chamber 1. *lizuka* provides no motivation to modify either the library 2 or the transportation system. Therefore, Applicants respectfully suggest that the system recited in claims 10-11 is not obvious over *Iwai* in view of *Iwasawa*, and further in view of *lizuka*.

Other Remarks

The references cited by the Examiner but not relied upon have been reviewed, but are not believed to render the claims unpatentable, either singly or in combination.

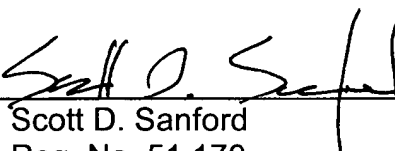
In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 50-0639 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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APPENDIX

As required by 37 C.F.R. §1.121(b)(ii), marked-up copies of the claims amended in this Response are provided below with insertions underlined and deletions bracketed.

1. (Twice Amended) A workpiece management system for storing [and transferring] substantially flat workpieces after they have been removed from a workpiece storage cassette having been located within a container including a container shell and a container door within an environment that is isolated from ambient conditions, the system comprising:

a load port [assembly adapted to support a] capable of supporting the container [having a container door and a container shell, said load port assembly] and [being capable of] separating the container door from the container shell in order to provide access to the workpieces supported by [a] the workpiece storage cassette [located within the container];

[at least two stockers, said stockers being capable of] a stocker for storing [a workpiece] the workpieces [that has] after they have been removed from the [container] workpiece storage cassette; and

a workpiece transfer mechanism for removing the workpieces from the workpiece storage cassette and placing the workpieces in said stocker and for transferring the workpieces [between said stockers] from said stocker to [and a container] the workpiece storage cassette.

2. (Twice Amended) A workpiece management system as recited in claim 1, wherein said [stockers store] stocker stores the workpieces in a substantially vertical orientation.

3. (Twice Amended) A workpiece management system as recited in claim 1, wherein said [stockers] stocker in the workpiece management system may be varied between one and six.

4. (Twice Amended) A workpiece management system as recited in claim 1,

wherein said [stockers] stocker in the workpiece management system may be varied between one and eight.

5. (Twice Amended) A workpiece management system as recited in claim 1, wherein said [stockers] stocker in the workpiece management system may be varied between one and twelve.

6. (Twice Amended) A workpiece management system as recited in claim 1, wherein said [stockers] stocker may be stored remotely from the workpiece management system.

7. (Twice Amended) A workpiece management system as recited in claim 1, wherein said [stockers] stocker may be used for bulk transport of reticles away from the workpiece management system.

8. (Twice Amended) A reticle management system for storing individual reticles after the reticles have been removed from a reticle holding cassette located within a SMIF pod having a pod shell and a pod door, the system comprising:

a load port assembly [being] capable of supporting [a] the SMIF pod [having a pod door and a pod shell,] and [being adapted to separate] separating the pod door from the pod shell to provide access to the reticles supported by the reticle holding cassette [contained within the SMIF pod];

[at least two] a reticle [stockers] stocker capable of storing a plurality of individual reticles that have been removed from the cassette [SMIF pod], said reticle [stockers] stocker including:

a rotatable central shaft;

a plurality of annular carousels[, each said annular carousel being] coaxially aligned with and secured to said rotatable central shaft, [and] each said annular carousel having multiple substantially radially oriented slots extending outward from said rotatable central shaft such that each said [slots store a] slot is capable of storing an individual reticle in a substantially vertical orientation; and

a fan filter unit [that circulates] being adapted to circulate clean air by the reticles seated in each said [slots] slot; and

a reticle transfer mechanism for transferring reticles between said [reticle stockers] slots and the reticle holding cassette [SMIF pod].

10. (Twice Amended) A reticle management system as recited in claim 8, wherein said reticle [stockers] stocker may be stored remotely from the reticle management system.

11. (Twice Amended) A reticle management system as recited in claim 8, wherein said reticle [stockers] stocker may be used for bulk transport of reticles away from the reticle management system.

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